

**REMARKS**

Claims 1-4 are all the claims pending in the application. Upon entry of this Amendment, claims 1 and 2 are amended. No new matter is presented.

Initially, Applicant notes that the Examiner has not indicated acceptance of the drawings filed on July 29, 2004. Therefore, the Examiner is requested to indicate acceptance of these drawings in the next action.

In the Office Action, the Examiner objects to the specification because the venting structure recited on pages 11 and 12 is allegedly unclear. Further, claims 2-4 are rejected under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph, as being indefinite, and claims 1-4 are rejected under 35 U.S.C. § 103(a).

**Objections to the Specification**

In response to the objection to the specification, Applicant submits herewith new Figure 3 which depicts the metallic vent member 63a and the anti-leakage ceramic filter 63c disposed in the vent member, as described in the specification at pages 11-12. Additionally, Figure 3 depicts the plurality of grooves 63d, which are disclosed as being formed in an upper side of the vent member, but were previously not shown. The junction paragraph at pages 11 and 12 and the description of the drawings in the specification have been amended accordingly. Further, Applicant notes that this paragraph is amended to correctly refer to “air vent 63b”. Therefore, withdrawal of the objection to the specification is requested.

**Claim Rejections - 35 U.S.C. § 112, second paragraph**

With respect to the rejection of claims 2-4 under 35 U.S.C. § 112, second paragraph, Applicant notes that claim 2 is amended to correct for lack of antecedent support for the elements identified by the Examiner. Further, claim 2 is amended to clarify that the plural ceramic hollow particles are in the slit of the forming mold. Accordingly, Applicant requests the withdrawal of these grounds of rejection.

**Claim Rejections - 35 U.S.C. § 103(a)**

Claims 1-4 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Chandley et al. (U.S. Patent No. 5,299,619, hereinafter “Chandley”) in view of Cook (U.S. Patent No. 5,524,697). Applicant traverses this ground of rejection.

In rejecting claims 1-4, the Examiner alleges “Chandley et al substantially show the invention as claimed except that they do not cast composite material, do not provide a pressure die for pressurizing the array of apparatus elements and packing (claim 1 only) and an air vent (claim 1 only).” (Office Action at page 3).

However, the Examiner does not refer to any portion of the Chandley reference to support this contention, nor does the Examiner identify any of the elements of claims 1-4 which are allegedly taught by Chandley. Rather, the Examiner merely states in conclusory fashion that

elements of the claims are substantially shown by Chandley. Notwithstanding the Examiner's rejection, Applicant submits that the Examiner has failed to establish *prima facie* obviousness.

For instance, Chandley teaches an apparatus for making an intermetallic casting wherein a charge comprising a solid first metal is disposed in a vessel and a charge comprising a second metal, which reacts exothermically with the first metal, is melted in another vessel. According to Chandley, the solid first metal is melted in a melting chamber together with molten aluminum (i.e., second metal). (Chandley at col. 7, lines 38-48). After a desired casting temperature is reached, a frangible closure member at the bottom of the melting chamber is broken to allow the melt to flow by gravity into mold cavities below the melting chamber. (Chandley at col. 7, line 65 - col. 8, line 10).

As conceded by the Examiner, Chandley fails to teach the claimed pressure die, air vent, and packing. Further, Chandley fails to teach a composite material including ceramic hollow particles.

In order to compensate for the deficiencies of Chandley, the Examiner relies on Cook. As alleged by the Examiner, Cook teaches an apparatus for casting a composite article which includes "dispensing means for placing ceramic particles into the mold cavity and an air vent with a filter for allowing gas to pass therethrough but not ceramic particles." (Office Action at page 3). Applicant notes that a "dispensing means" is not recited in the claim, and it is unclear how such an element would meet the claim limitations which are admittedly lacking in Chandley. Further, the Examiner has not identified the claimed pressure die, which "pressurizes

“an array of said gas feeding member, said molten stock vessel, said packing, said forming mold and said air-removal ceramic filter along an arrayed direction, thereby bringing these components into tightly contacted relation.”

Applicant submits that the pressure die recited by claim 1 is neither taught nor suggested by Cook. For instance, Cook teaches a system for producing a composite material in which a reinforcement material mixed with a binder material is injected from a first supply into a die and a liquid metal from a second supply is subsequently injected into the die. (Cook at col. 4, lines 46 - col. 5, lines 25, see Fig. 1). Cook teaches a second configuration where an upper die and lower die are provided. In this configuration, the composite material is injected into the die cavity formed by the upper and lower die. (Cook at col. 5, lines 62 - col. 6, lines 15). After the composite material is injected, the upper die is raised and liquid metal is poured or injected into the bottom die and the upper die is the lowered to press the liquid metal into the die cavity. (Cook at col. 6, lines 16-37).

Thus, Cook merely teaches that the pressure die may comprise upper and lower parts wherein the upper part is raised for liquid metal to be poured or injected into the die cavity and the upper part is lowered to press the liquid metal and composite material. Further, Applicant notes that the liquid metal supply and the gas supply in Cook’s system are clearly separate from the die and are in no way pressurized by the die.

In addition, Cook fails to teach the claimed packing, which includes “through hole and seated against the bottom of said vessel body in a manner to allow the through hole thereof to be

communicated with said molten stock outlet port”. Further, the Examiner does not identify how Cook teaches the claimed air-removal ceramic filter.

Moreover, the Examiner has failed to provide a proper motivation for combining the teaching of Cook with Chandley. Rather the Examiner contends “[i]t would have been obvious to provide the ceramic particle dispensing means and the air vent of Cook in the apparatus of Chandley et al. if a composite article is to be made” and further contends “[i]t would have been obvious to provide a packing between the molten metal chamber and the mold of Chandley et al. and a pressurizing device to press the chamber and the mold in a tightly fit condition if the molten metal chamber and the casting mold are made separable.” (Office Action at page 3).

Applicant submits that such unsupported allegations do not adequately address the issue of motivation to combine and are insufficient to establish *prima facie* obviousness. *In re Kotzab*, 217 F.3d 1365, 1371, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000) (“particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed”); *In re Lee*, 277 F.3d 1338, 1343-1344, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002) (the “factual question of motivation is material to patentability, and [can] not be resolved on subjective belief and unknown authority”). Here, the Examiner has not cited to any portion of the actual disclosure of Cook in support of the alleged motivations. Moreover, the motivation statements presuppose that a composite material is to be made and a molten metal chamber and the casting mold are made separable without presenting any explanation as to the benefit such modifications would provide.

Therefore, Applicant submits that the Examiner has not established *prima facie* obviousness at least because the combination of Chandley and Cook fails to teach or suggest all the claim limitations and the motivation to combine the references is improper. Accordingly, reconsideration and withdrawal of the rejection of claim 1 is requested.

Further, the above arguments are equally applicable to claim 2, which recites a method with similar features. Thus, reconsideration and withdrawal of the rejection of claim 2 is requested. Additionally, Applicant submits claims 3-4 are allowable at least by virtue of depending from claim 2.

### **Conclusion**

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. Application No. 10/804,221

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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CUSTOMER NUMBER

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**AMENDMENTS TO THE DRAWINGS**

**Please add new Figure 3.**

Attachments: New sheet